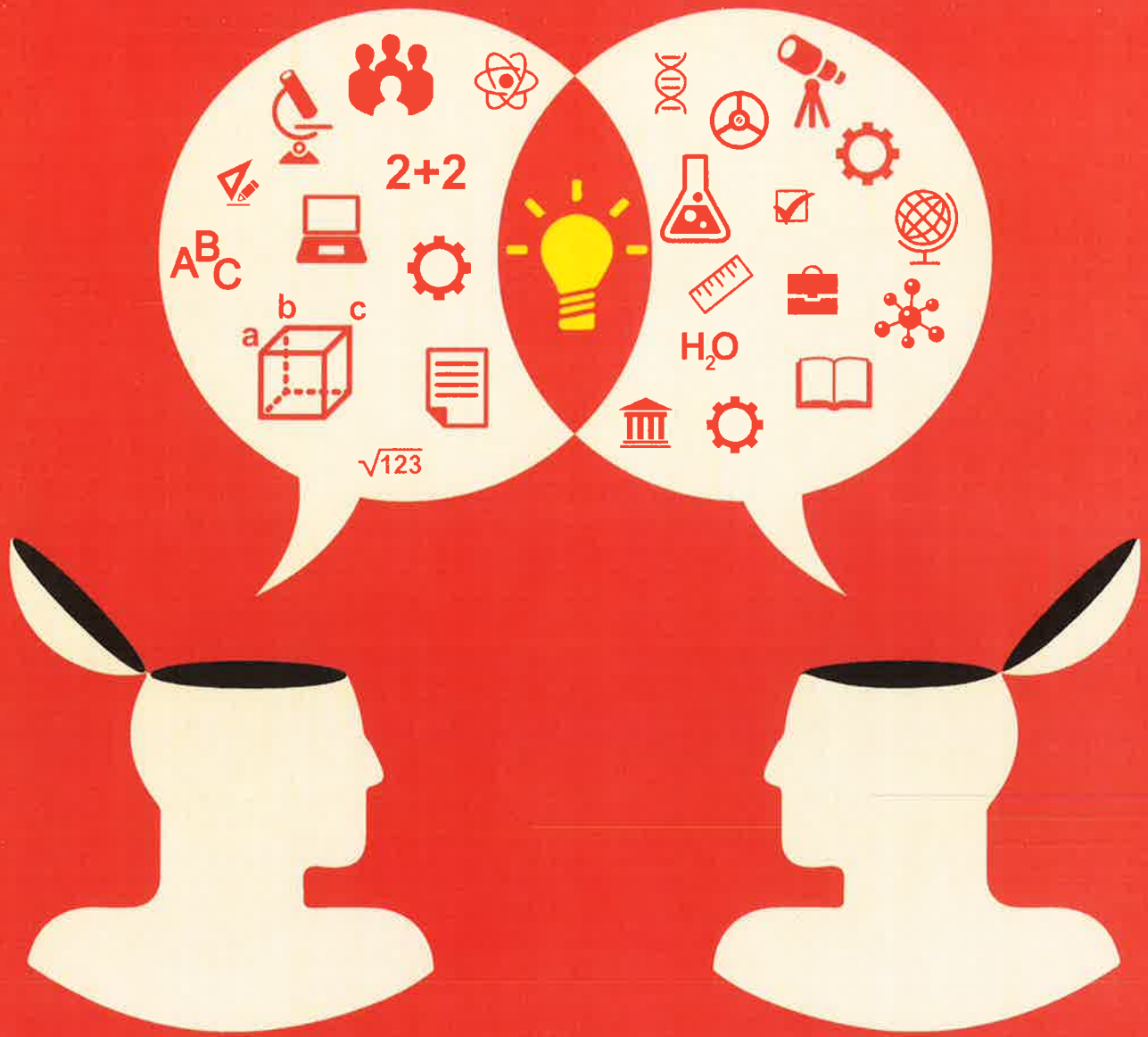
15th FEA research symposium

Faculty of Engineering and Architecture



22. Laurens Delva, Kim Ragaert, Joris Degrieck and Ludwig Cardon (EA10)

Twin-screw Extrusion of Montmorillonite filled Polypropylene: (re)Processing and Characterization

The (re)processing of polypropylene composites filled with montmorillonite clay was carried out by twin-screw extrusion. The mechanical and morphological properties at different clay loadings and different operating conditions were characterized. The influence of the clay loading on the crystal morphology was studied using optical microscopy. It was found that crystal growth was affected by the incorporation of nanoparticles. The reprocessing results indicated that the intercalation of the MMT clay was improved in the first few extrusions, thus improving the mechanical properties. Further Increasing the processing steps lead to a decrease in elastic modulus and impact strength, which was attributed to a reduction in matrix-filler interaction, most probably caused by organoclay degradation.

23. Brecht Devolder, Pieter Rauwoens and Peter Troch (EA15)

Numerical Modeling of Wave Energy Converters

Wave energy from ocean waves is absorbed using Wave Energy Converters (WECs). In order to extract a considerable amount of wave power at a location in a cost-effective way, large numbers of WECs are arranged in farms using a particular geometrical configuration. Interactions between the individual WECs (near field effects) affect the overall power production of the farm. One should avoid, for instance, that one WEC is positioned in the wake region of another WEC. The wave height reduction behind an entire WEC farm (far field effects) affects other users in the sea, the environment or even the coastline.

By using a coupled numerical modeling, I aim to develop a methodology (and a related numerical tool) to answer the fundamental underlying questions on farm design: finding the optimal and cost-effective configurations of WEC farms for power production, and quantifying the related environmental impact. A numerical model, suited for near field effects will be developed and validated. It will be combined with a numerical model suited for predicting far field effects for two purposes: to reduce the computational cost of the near field model and to get more accurate results of the far field effect of WECs.

24. Anastasia Dimou (EA06)

Mapping, Enriching and Interlinking Data from Heterogeneous Distributed Sources

As Linked Open Data is gaining traction, publishers incorporate more their data to the cloud. Since the whole Web of Data cannot be semantically represented though, data consumers should also be able to map any content to RDF on-demand to answer complicated queries by integrating information from multiple heterogeneous sources distributed over the Web or offline. In both cases, the quality and integrity of the

generated RDF output affects the performance of traversing and querying the Linked Open Data. Thus, well-considered and automated approaches to semantically